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ABSTRACT

The Discetech project, which was started in 1996 in Northern Italy, aims at experimenting the introduction of new technologies within the teaching-learning activities of high school classrooms. Since 1998, a similar project, Bimbotech, has been developed for elementary classrooms (for children ages four- to seven-years old). Several hundreds of experiences involving several thousands of pupils have been carried out by the teachers, who have been previously instructed and assisted by the project's staff. This paper briefly introduces a case study, one of the most interesting Bimbotech experiments analyzing the organization, the phases, the results and the lessons learned. The final section provides a few useful suggestions for mutual connection between multimedia and knowledge. (Author)

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Multimedia: a powerful support for multidisciplinary approach. A Case Study from the Project Discetech-Bimbotech.

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Abstract: The Discetech project, which has started in 1996 in Northern Italy, aims at experimenting the introduction of new technologies within the teaching-learning activities of high school classrooms. Since 1998, a similar project, Bimbotech, has been developed for initial classrooms (from 4 to 10 years old children). Several hundreds experiences involving several thousands pupils have been carried on by the teachers who have been previously instructed and assisted by the project's staff. This paper briefly introduces a case study, one of the most interesting Bimbotech experiments analyzing the organization, the phases, the results and the learned lessons. The final section wants to suggest a few useful remarks upon mutual connection between multimedia and knowledge.

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1. An overview of the project

DISCETECH and BIMBOTECH are twin-projects, which try to experiment new technologies to teach and learn in the Italian school system. Discetech started in the city of Como[1] in 1996, while Bimbotech in 1998, under the initiative of Politecnico di Milano[2]; in 1997 it also branched out in Lecce[3], for the initiative of the Faculty of Engineering of the local University. Finally last year a new branch was opened in Milan.
The Discetech project as target has high school teachers and students while the Bimbotech one aims at children from 4 to 10 years of age (this is equivalent in Italy to "scuola materna" and "scuola elementare").

First of all, we attempt to support teachers to achieve the basic ICT knowledge necessary to their teaching activities using computers. In a second time, on the other hand, teachers are asked to plan and realize a didactical experience in the classroom in order to:

- Try to employ multimedia technologies within the class curriculum to find out their useful potential;

[1] Como is a town near Milan, where another headquarters of Politecnico has been placed.
[2] The largest technical University in Italy, with Faculties of Engineering and Architecture.
[3] Lecce is a town in the south of Italy.

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- Evaluate the efficiency of the above goals regarding:
  - Content acquisition
  - Knowledge building process (e.g. focusing on and selecting information);
  - Behavior skills acquisition (e.g. co-operative skill and teacher-student communication).

Our vision aims at improving the teacher's background and skills with the purpose to experiment new didactical solutions with students where new technologies must be involved and projects carried on collecting data all the school-year long. These attitude answers the purpose to acquire expertise mainly in experimenting with computer and interacting with multimedia instruments rather than discussing what should be done and so stopping just on theory.
Besides, there's no intention to judge the relationship between teachers and pupils or to give advice about the pedagogical approach that teachers choose to make use of: they have total autonomy on selecting the one they prefer and wish.
The project would require a three years commitment:

- the first year (**basic level**) looks after the off-line and on-line multimedia employment;
- the second one (**advanced level**) focuses on planning and carrying out a simple hypermedia product (off-line, e.g. a power-point presentation, as well as on-line e.g. a small HTML hypertext);
- the third and last one (**experimental level**) encourages teachers to realize (with Discetech staff support) a complex and complete multimedia project.

The first two years are organized in three phases:

- **formation** (from October to January): teachers acquire the ICT knowledge necessary to the experience that Discetech suggest them to realize in the classroom;
- **modeling** (February): teachers are guided by the staff to think about a proper personal project;
- **working within the class** (from March to April): each plan is developed during the school time.

Overall 600 teachers joined the Discetech program (some of them for more than 1 year) and more than 300 educational projects have been carried out, involving nearly 9000 students up till now.

In the next section we will present one of the best experiences, according to the originality and the quality of results, made during last year (2000/2001) in Como.

2. A Case Study: The *Pinocchio*'s tale

This experience has been carried on by one of the most active group of teachers taking part to the Bimbotech program.[4] The classes involved were two, both consisting of thirty 7-8 years old children.

7 years old children	30
8 years old children	30

[4] The school is *Scuola Elementare di via Giussani – circolo Como 4, via Giussani - Como*. The teachers involved are Raffaella Ciceri and Francesca Rossi.

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The overall aim of the experience can be summarized as it follows:

a) Get children used to the PC in the day by day class activities, promoting self-interaction with computer.
b) In particular, knowing and using the Microsoft program called Power Point as a tool to realize a slide each of the children as a part of a global classroom work.
c) Employing the new technologies to unify all the different experiences of the knowledge building process including both the traditional teaching method (like frontal lesson) and new attempts concerning theatrical activities, drawing, creative writing.

The project took up several subsequent months trying to make the *Pinocchio* 's tale the topic of the entire school year.
The teachers started with the reading of the tale, followed by the comprehension of the text. In a second time they made the children split it up in several sequences, one for each of them so that every child has been able to make a little abstract and a drawing in color, interpreting the characters in theatrical laboratories and thinking over the whole tale plot, interacting successively each other in the classroom. After that, the last step of the experience concerned the employment of computers: children are put in the position to scanner their drawing and to realize a Power Point slide. In this phase teachers just guided and supported them on demand to do themselves every step, letting them using entirely the PC.

The Power Point presentation contains:

- **The complete tale** developed slide by slide in order of time, each one made by a singular pupil, which includes the insert of a colored background, some buttons, a text, a scanned drawing and an animation (see the picture below as example – figure 1–).

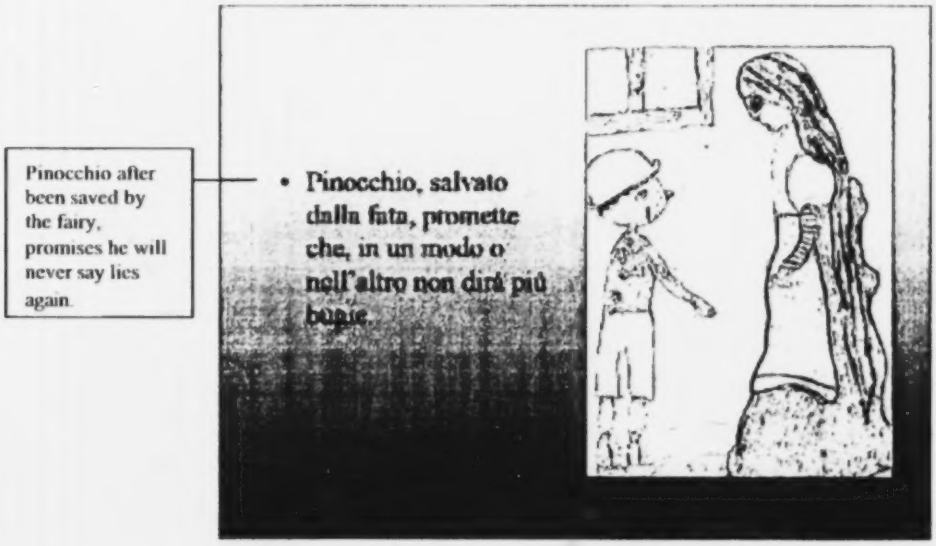
Pinocchio after been saved by the fairy, promises he will never say lies again.
• Pinocchio, salvato dalla fata, promette che, in un modo o nell'altro non dirà più bugie.

Figure 1: The screenshot of an explicative slide.

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• **The cast** of *Pinocchio*'s tale developed in some slides, one for each character, realized by children who thought about the most relevant qualities that marked them out, as you can see in the next picture, illustrating the cat and the fox, two bad characters who want to lead Pinocchio astray. According to the hypertext structure every slide has a special button that allows to turn back to the home page.

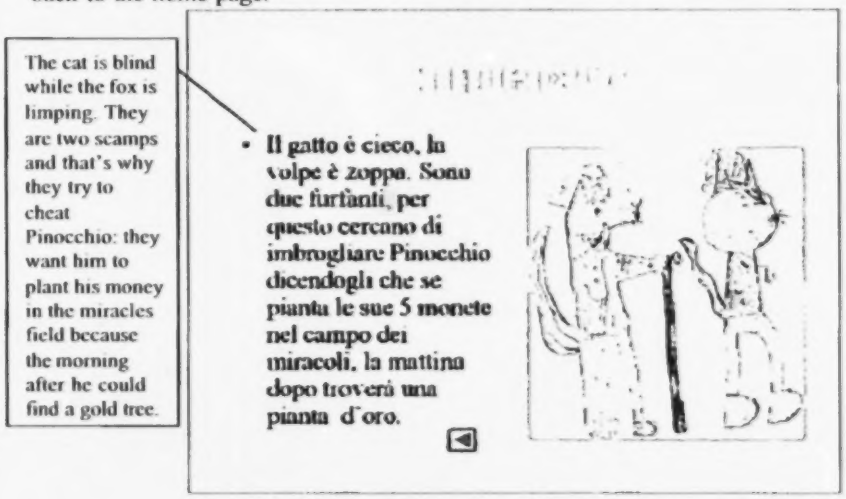
The cat is blind while the fox is limping. They are two scamps and that's why they try to cheat Pinocchio: they want him to plant his money in the miracles field because the morning after he could find a gold tree.
• Il gatto è cieco, la volpe è zoppa. Sono due furfanti, per questo cercano di imbrogliare Pinocchio dicendogli che se pianta le sue 5 monete nel campo dei miracoli, la mattina dopo troverà una pianta d'oro.

Figure 2: The cat and the fox.

• **The theatrical laboratories**: according to the school guidelines, which in Italy are fixed by P.O.F.[5] since 1999 with the beginning of the self-governing school, the whole work program during the school year has been based on the novel of Pinocchio. That's why teachers chose to stage it involving several classes and let the children socialize from a classroom to another. The hypermedia is a precious support to relate this experience as you can see in the following picture.

IL LABORATORIO DELLA CITTA' DEI BALOCCHI
We imagined to live in a beautiful and magic town. We liked everything about this experience especially the ballet.
• Abbiamo immaginato di essere in una città bellissima.
• Ci è piaciuto tutto soprattutto il balletto.

Figure 3: The description of the theatrical lab with photo.

[5] P.O.F. is the Plan of the Formative Offer, which defines the cultural and planning school identity and helps to explain and share the pedagogical and didactical directions. This plan allows to fix a specific goal trying out a new strategic lineup to get to it.

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- **Different conclusions**: as a creative writing exercise, teachers asked children to invent some gripping imaginary ends and put them in a slide in accordance with each one wish (see the picture showing the opening slide to the different courses).

Figure 4: The screenshot where you're supposed to explore alternative conclusions.

3. Conclusion

The importance of this experience consists on the attempt to combine different activities, which culminate in a multimedia product: its creation allowed a new manner for children to relate each other mutually. Furthermore it helps to renew learning and teaching contents: indeed, *Pinocchio*'s tale has been approached in a different way and this permits to create a new manner of knowing by the development of a radically fresh work. The fact that pupils have found out several different conclusions to the story (see previous picture – figure 4 –) is exemplary for us to explain the innumerable creative powers of a project like this one.

Discetech highlights every intelligence style: in this particular perspective technologies and especially multimedia are very useful to improve all learning and teaching process structures, exploiting a richer interaction across the activities. They keep concentration up as well, feeding a reticular knowledge based on the association's reasoning and powering every human talent up contributing to make the classroom's relationship stronger and more complete than usual since computers naturally encourage cooperation, as Maragliano and Moretti say[6].

We think that an experience like the one we reported could be easily and successfully exported in a lot of other primary schools. That's why we are strongly interested to spread out this project offering the possibility to share this work and the useful information about it and to approach other works too by Internet.

[6] R. Maragliano, G. Moretti, *Valutare nel multimedia*, in R. Maragliano, *I media e la formazione*, Roma, La Nuova Italia Scientifica, 1994.

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This experience is a meaningful example about the role that multimedia languages could hold inside the school system. The computer-assisted education is important for several reasons: besides the merely technical and application-oriented aspects, new technologies are means for communication's increase and teaching method's strengthening widening knowledge searching a new and stronger interconnection between different disciplines. Their employment allow to get over the traditional teaching statute promoting a different way of being together and communicate, which is possible thanks to their ability to actively involve students in learning processes.

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